

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
31 December 2003 (31.12.2003)

PCT

(10) International Publication Number  
**WO 2004/000709 A1**

(51) International Patent Classification<sup>7</sup>: **B65H 59/24**

(21) International Application Number:

PCT/GB2003/002577

(22) International Filing Date: 13 June 2003 (13.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/389,777

19 June 2002 (19.06.2002) US

(71) Applicant (for all designated States except US):  
**TEXKIMP LIMITED** [GB/GB]; Manchester Road,  
Northwich, Cheshire CW9 7NN (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **NIEDERER, Kurt,**  
**W.** [US/US]; 3021 Mountainbrook Road, Charlotte, NC  
28210-4829 (US).

(74) Agents: **PIDGEON, Robert, John et al.**; Appleyard Lees,  
15 Clare Road, Halifax HX1 2HY (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

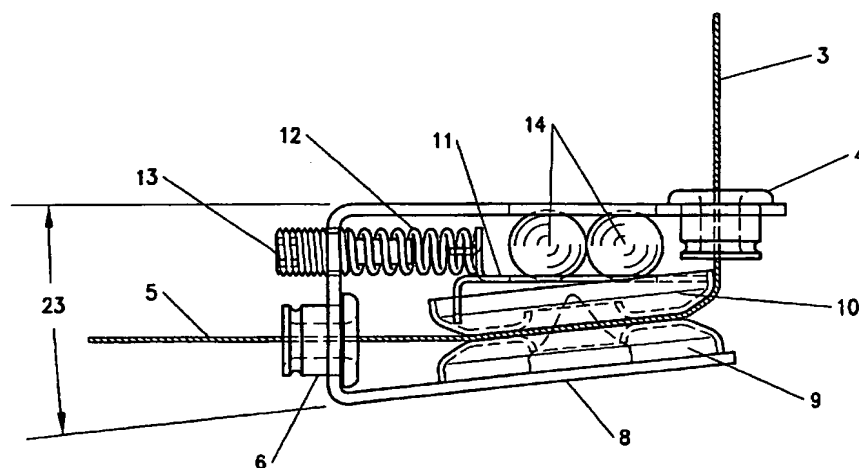
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPENSATING DISK TENSION CONTROLLER



(57) Abstract: An improved tension controller for a strand to achieve constant downstream tension regardless of tension variation in the upstream strand has a pair of tensioning plates (9, 10) between which the strand upstream (3), downstream (5) is compressed, generating frictional force for added tension. A selectable loading force is applied to the controller in the opposite direction to the movement of the strand. This loading force acts on a wedge between a movable tensioning plate and a fixed plate (9). The angle between the fixed plate (9) and the strand between the tensioning plates generates a compression force at a right angle toward the compressed strand for added tension. The incoming strand is deflected before it reaches its compressed stage between the tensioning plates. This strand deflection generates a force-component in the direction of the strand movement and reduces the loading force correspondingly. By proper selection of the wedge angle, the reduction of the loading force results in a reduction of the added tension by the same amount.